WASHINGTON STATE DEPARTMENT OF ECOLOGY

STATE OF WASHINGTON
DEPARTMENT OF COMMUNITY, TRADE AND ECONOMIC DEVELOPMENT

Energy Supply TWG Teleconference Meeting #1

May 3, 2007

WA Departments of Ecology & Community Trade & Economic Development

Center for Climate Strategies

Ross & Associates

Welcome and Introductions

- Technical Work Group (TWG) members
- Agency Advisors: Departments of Ecology and CTED
- TWG facilitation team
- Public

Today's Agenda

- Purpose and Goals
- Part 1: Review of the CAT and TWG process
- Part 2: Draft WA Emissions inventory & forecast
- Part 3: Catalog of State Actions
- Next Steps for TWG
- Agenda, Time and Date for Next Meeting
- Public Input and Announcements

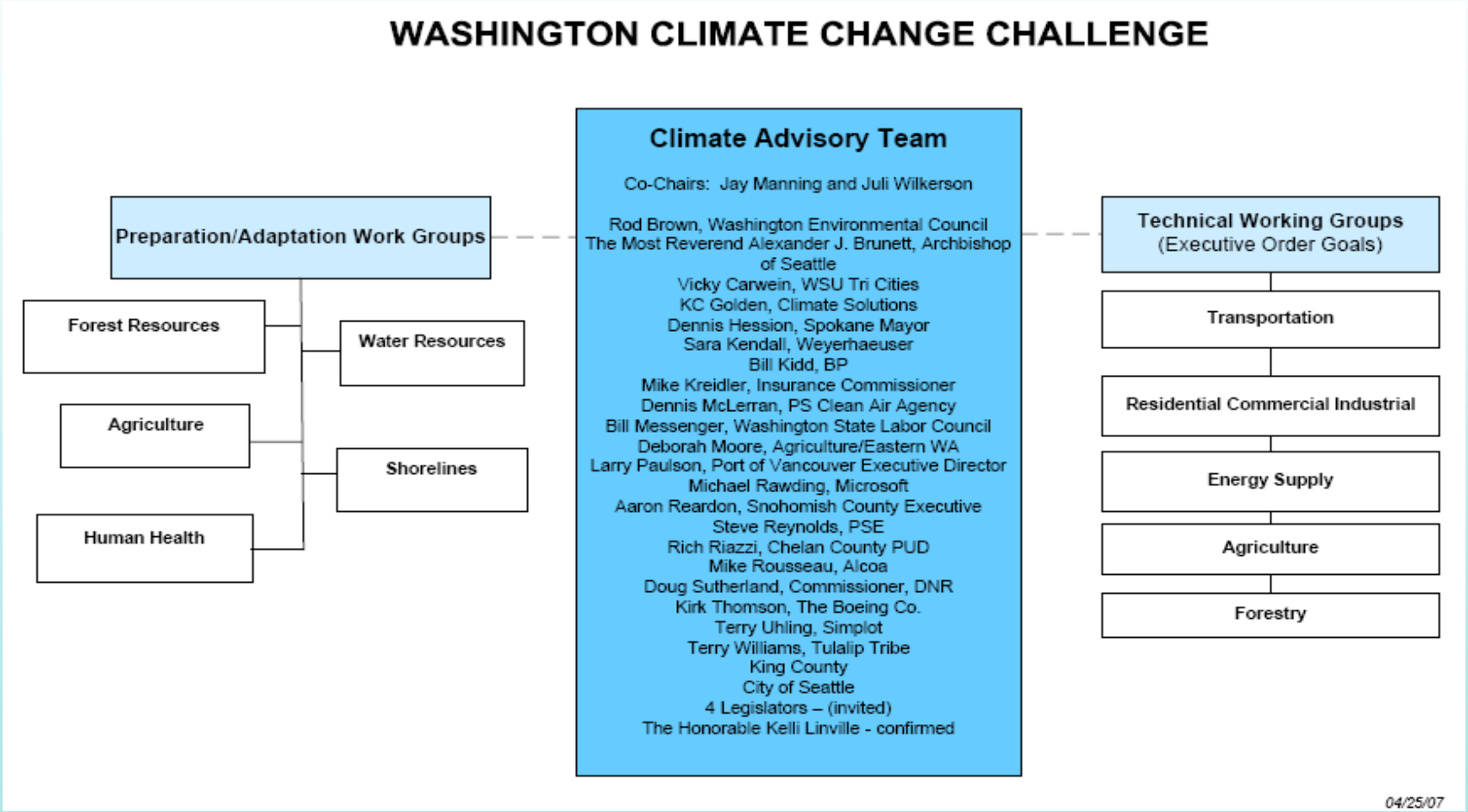
Part 1

- CAT and TWG Process

Purpose & Key Outcomes

- Purpose of the CAT
  - Develop recommendations for achieving the goals laid out in Executive Order 07-02
- Charge to the CAT
  - Review and approve state greenhouse gas (GHG) inventory and forecast
  - Review and assess recent actions taken and impacts on goals
  - Identify actions to meet 2020 goals for GHG emissions, job creation reduced fuel imports
  - Evaluate opportunities for regional collaboration
  - Identify state lead-by-example opportunities
  - Identify ways to coordinate state and local GHG reduction actions
  - Inform and involve the public
- *Report to ECY/CTED by January 2008*

CAT Org Chart



CAT and Climate Change Challenge

- ECY & CTED oversee and coordinate process
- CAT makes recommendations to ECY/CTED
- CAT provides guidance to the Technical Working Groups (TWGs)
- TWGs assist the CAT
- CCS & Ross provide facilitation, technical support and analysis
- Public input and review

CAT and TWGs

CAT

- Review existing and planned state actions
- Identify potential options for design and priorities for analysis
- Recommend actions to achieve the EO goals

Technical Working Groups (TWGs)

- Analysis, review and early ranking of options
- Develop initial straw proposals for design
- Input and review of CAT recommendations and reports
- Review state GHG inventory and forecast

TWG process is fully integrated with the CAT

- TWGs serve in an advisory role to CAT
- CAT membership on the Technical Working Groups

TWG Areas of Focus

- Transportation
  - Vehicle efficiency, alternative fuels & demand reduction programs, land use…
- Residential, Commercial, and Industrial (RCI)
  - Energy efficiency & conservation, building design, industrial processes, fuel switching…
- Energy Supply
  - Electricity and fossil fuel production, transmission, and distribution, geological sequestration…
- Agriculture
  - Biomass fuels, livestock management, soil carbon sequestration, solid waste and wastewater management and recycling…
- Forestry
  - Forest restoration, sustainable forest management, wood energy, sequestration…

* Note that some areas overlap and will be coordinated between groups

Timing

- CAT meetings
  - June 5 (Spokane), August 7, October 4, December 4
- TWG calls
  - Regularly scheduled
  - Two 1.5-2 hour calls in between each CAT meeting
- Work Products
  - Report to the Governor: Jan 2008

Ten Step Work Plan

1. Develop initial GHG inventories and forecasts
2. Identify possible GHG mitigation options
3. Identify initial priorities for evaluation
4. Evaluate supply potential, cost effectiveness; additional and feasibility issues as needed
5. Identify barriers, alternative policy design needs
6. Modify, add or subtract options as needed
7. Evaluate cumulative results of options
8. Iterate to consensus, with votes as needed
9. Aggregate options into implementation scenarios
10. Finalize recommendations and report language

TWG Next Steps

- Review and revision of Washington State greenhouse gas (GHG) inventory and forecast
- Identify “priorities for analysis” from catalog of state actions
  - Add existing and new WA options as needed
  - Rank and screen options
  - Suggest initial “priorities for analysis” to the CAT

Decision Criteria

- GHG Reduction Potential (MMTCO2e)
- Cost or Cost Saved Per Ton GHG Removed
- Fuel Import Savings
- Job Creation
- Externalities
- Feasibility Issues

Policy Template

Policy Description:

Policy Design:

- **Goals:**
- **Timing:**
- **Coverage of Parties:**

Implementation Methods:

Related Policies/Programs in Place:

Estimated GHG Savings and Costs per tCO2e:

- **Data Sources:**
- **Quantification Methods:**
- **Key Assumptions:**

Key Uncertainties:

Additional Benefits and Costs:

Feasibility Issues:

Status of Group Approval:

Level of Group Support:

Barriers to Consensus:

End Product/Final Report

- Executive Summary
- Background, Purpose And Goals
- Policy Recommendations & Results
  - Agriculture And Forestry
  - Energy Supply
  - Residential, Commercial, Industrial
  - Transportation & Land Use
  - Waste management
  - Cross Cutting Issues
- Appendices

Part 2

- WA Greenhouse Gas Inventory and Forecast review

Washington GHG Emissions

- Draft Inventory and Reference Case Projections
- Initial analysis by CTED, Ecology and CCS for discussion and final revision
  - Inventory of historical emissions from 1990 to most recent data year (2000-2005, depending on sector)
  - Projection of emissions to 2020

Coverage

- Six gases per USEPA and UNFCCC guidelines
  - Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O, Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulfur Hexafluoride (SF6)
  - Black Carbon may be considered separately
- All major sources and sinks
  - Transportation
  - Electricity Generation
  - Residential, Commercial, Industrial Fuel Use
  - Agriculture
  - Forestry
  - Industrial Processes and Other Sources

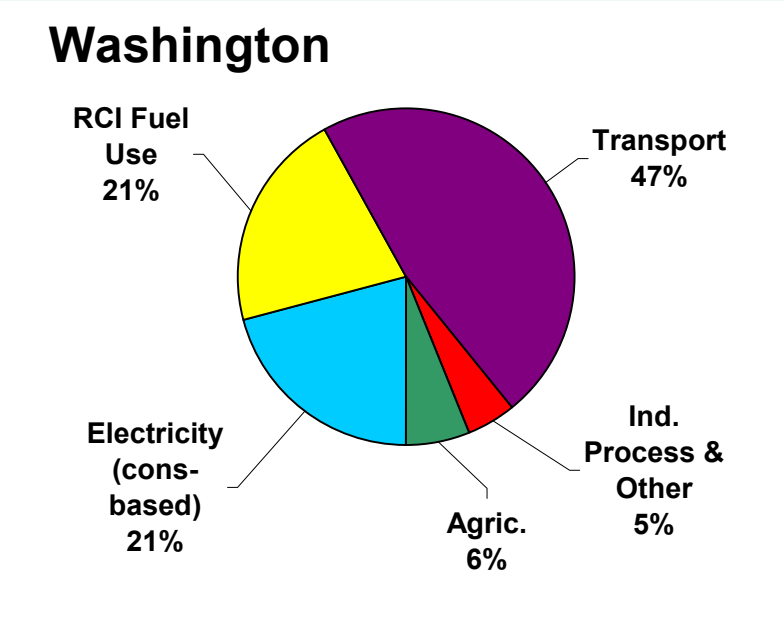
Inventory Approach

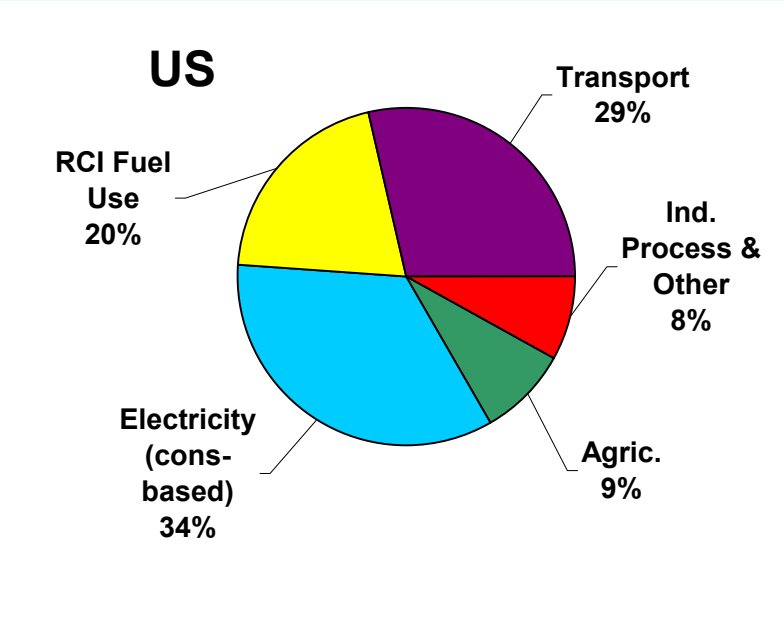
- Based on standard US EPA and UN methodologies, guidelines, and tools
- Emphasis on transparency, consistency, and significance
- Preference for Washington or regional data, where available, e.g. as developed by CTED
- Consumption (load-based) and production-based emissions from electricity generation
  - Simplified approach used for initial analysis

Projection Approach

- Reference case assumes no major changes from business-as-usual
  - Does not include impact of recent policies such as:
    2005 Clean Car Act (GHG tailpipe standards)
    Clean Energy Initiative
    Others noted in Executive Order
- Growth assumptions from existing sources
  - Northwest Power and Conservation Council
  - WA Population Forecast
  - Western Regional Air Partnership
  - US Energy Information Administration
  - US Bureau of Labor & Statistics

Washington & US Gross GHG Emissions By Sector, Year 2005 (draft)



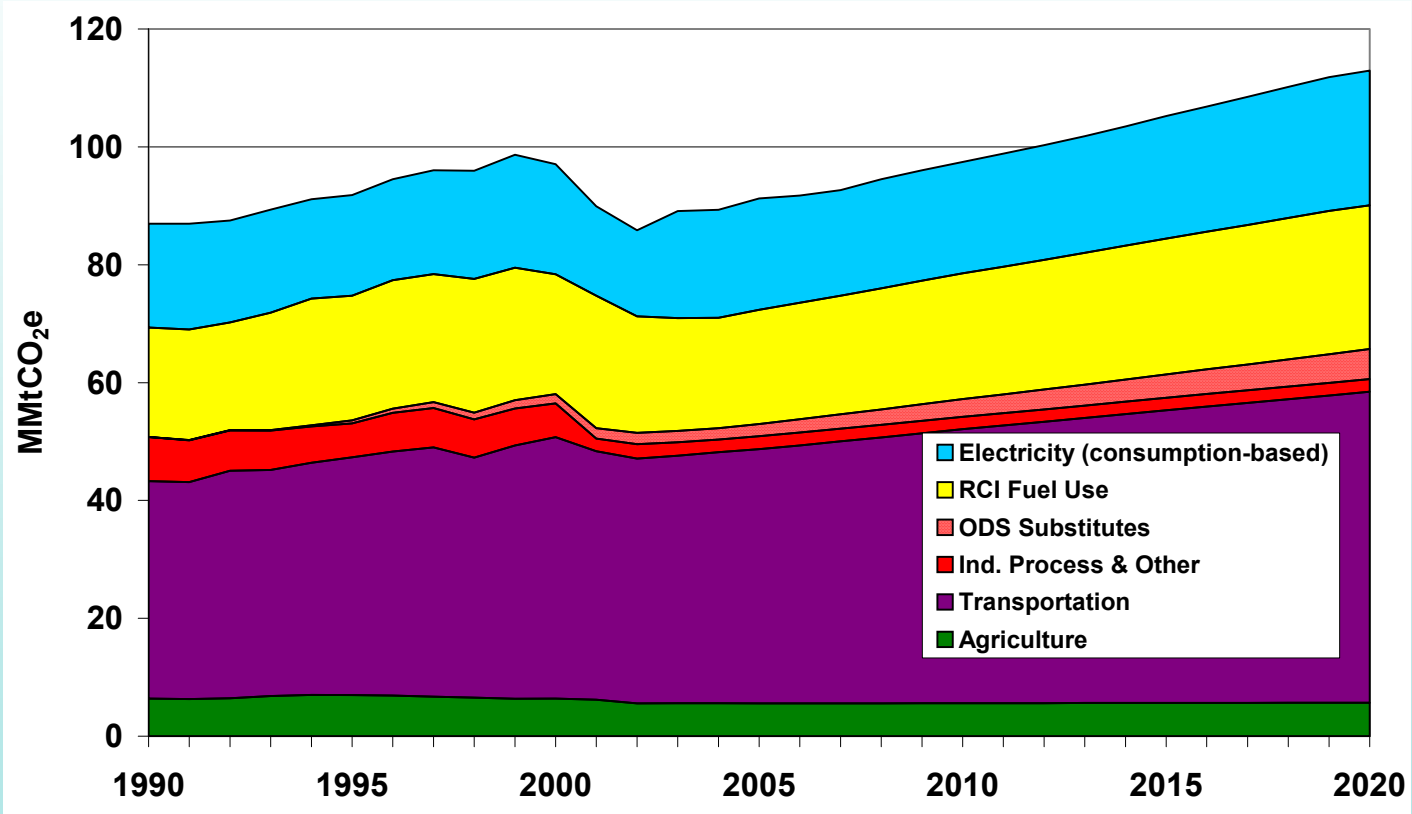


Industrial process emissions include emissions from Ozone Depleting Substances (ODS) substitutes

GHG emissions from solid waste and wastewater management are not yet available

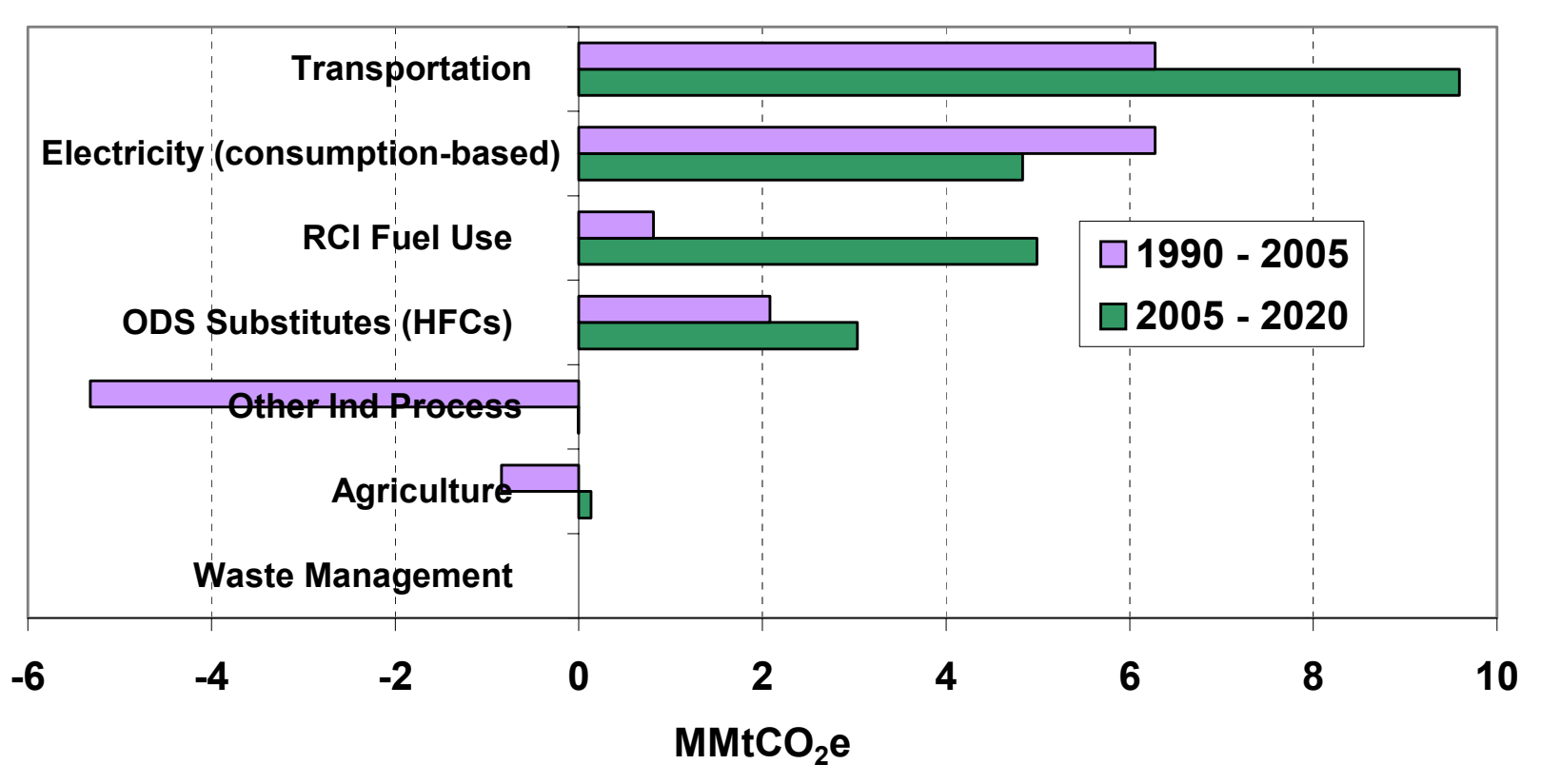
Washington Gross GHG Emissions By Sector (draft)

(includes consumption-based electricity emissions*, excludes forestry and soil sequestration)



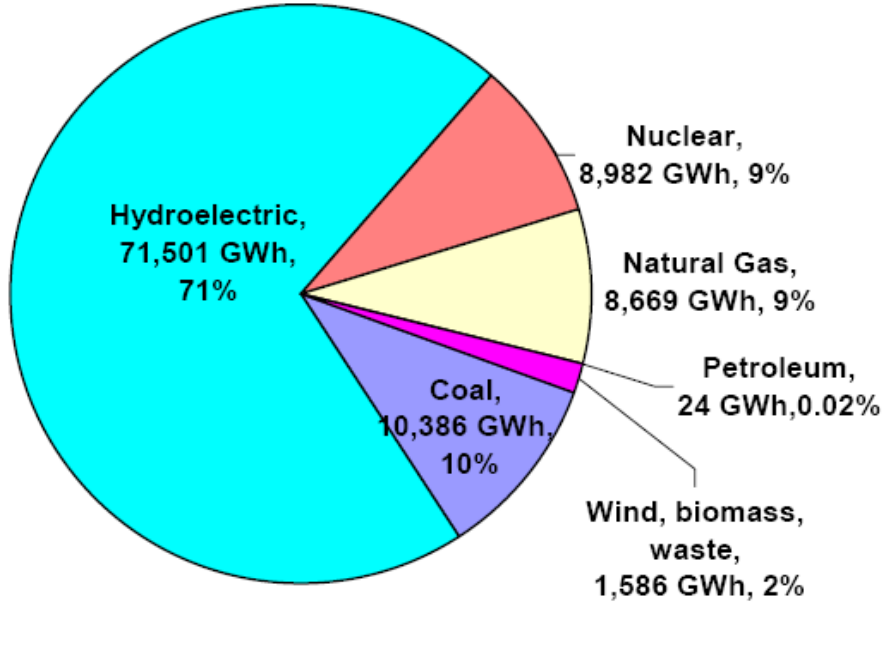
* - similar chart with production-based electricity emissions is available, GHG emissions from waste management will be added when available

Washington Gross GHG Emissions Growth (draft)

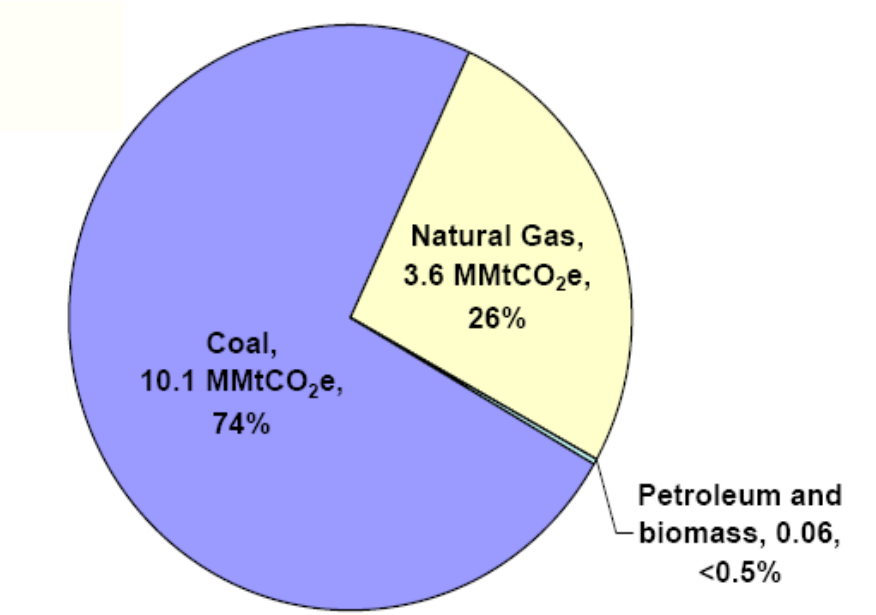


GHG emissions from waste management will be added when available

Electricity Generation and GHG Emissions from Washington Power Plants, 2004

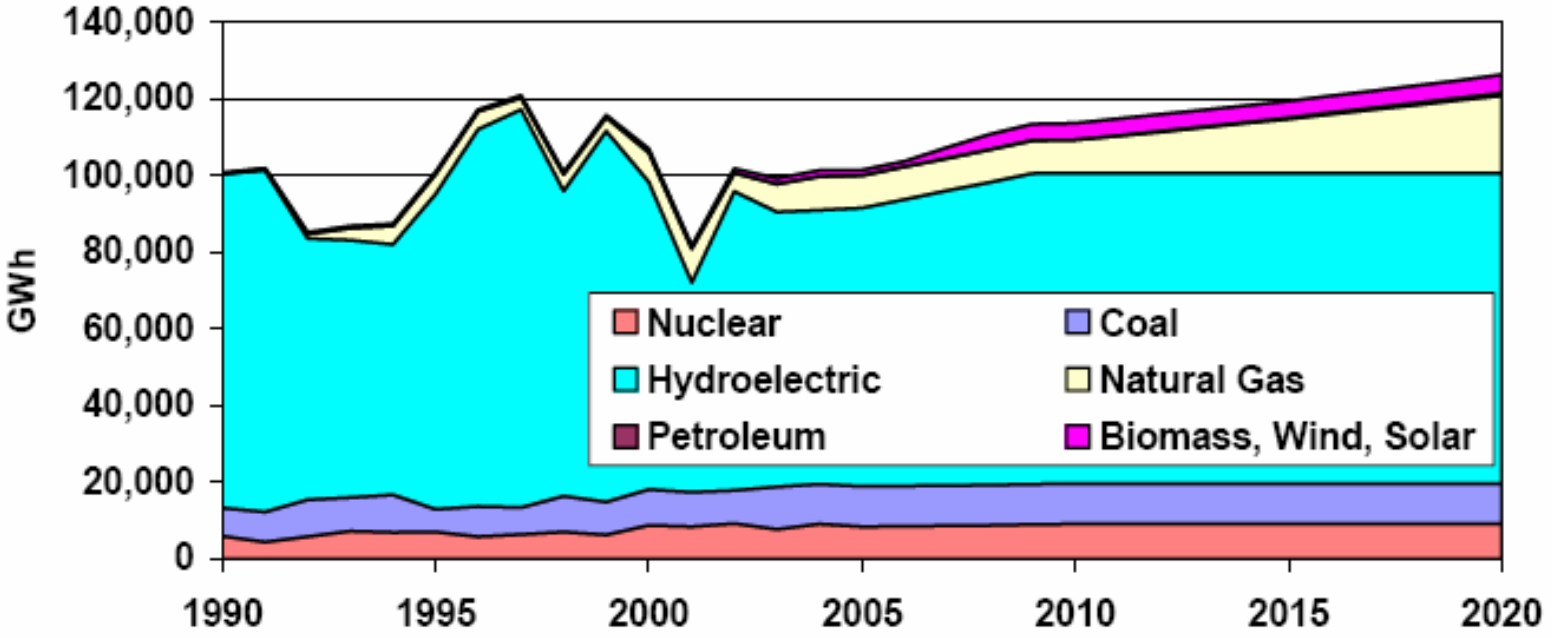


Total Generation
101,148 GWh



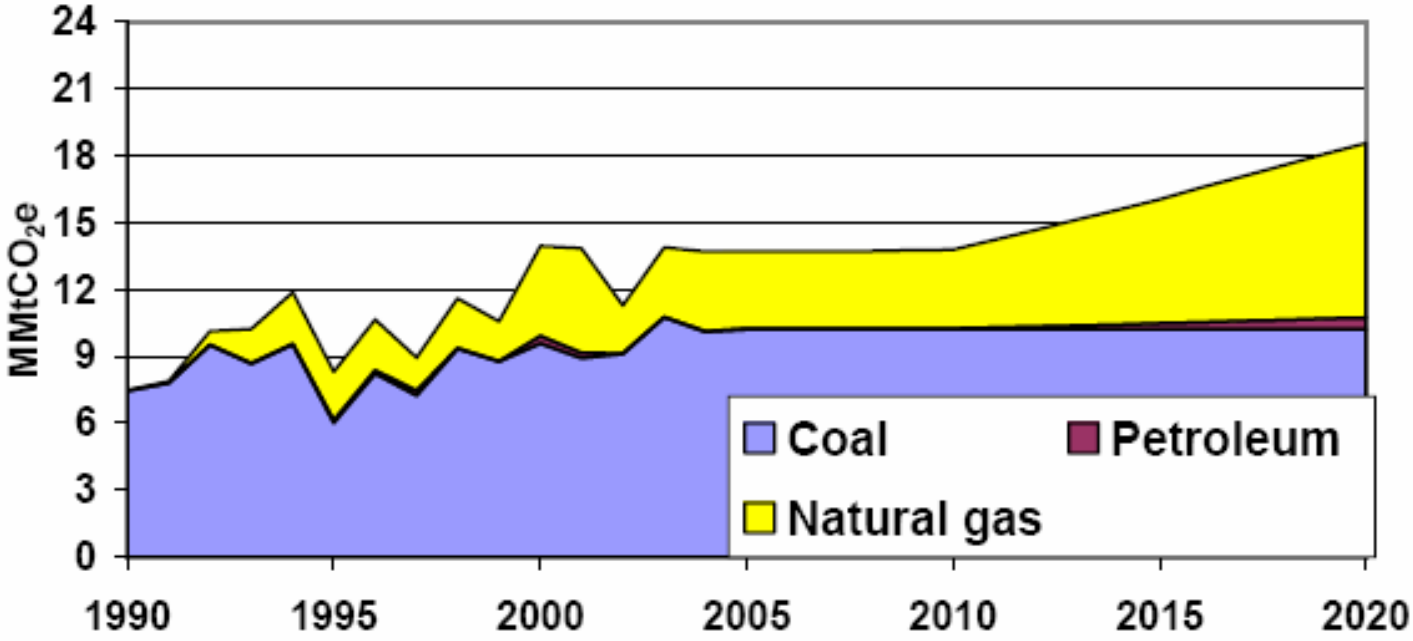
Total GHG Emissions
13.7 $MMtCO_2e$

Electricity Generated by Washington Power Plants 1990-2020



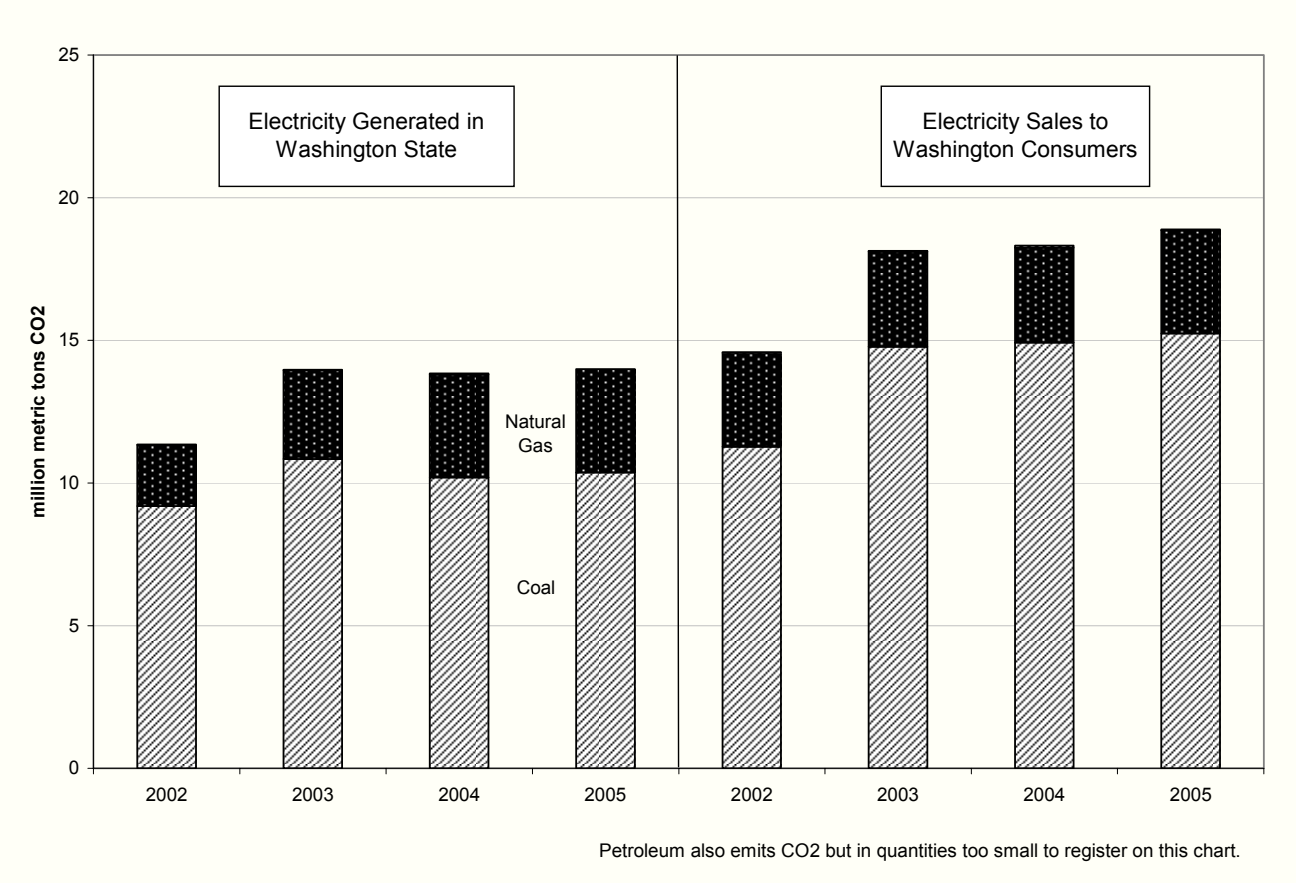
Source: 1990-2005 EIA data, 2006-2020 CCS calculations based on assumptions described above, generation from petroleum resources is too small to be visible in the chart

Washington GHG Emissions Associated with Electricity Production
(Production-Basis)



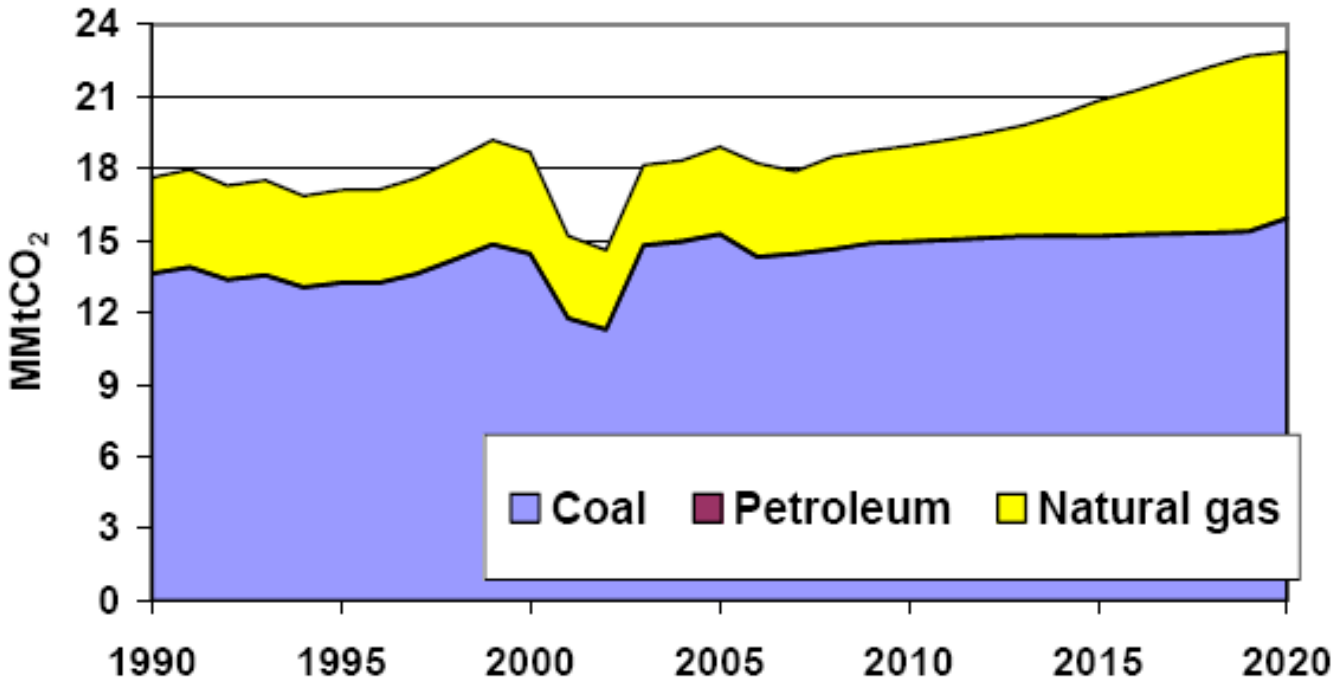
Source: CCS calculations based on approach described in text.

Electricity – Consumption (load-based) vs. Production approaches



Source: CTED analysis

Washington GHG Emissions Associated with Electricity Use
(Consumption-Basis)



Source: CCS calculations based on approach described in text.

Key Assumptions and Uncertainties

- Growth in electricity sales
  - 1.4%/yr to 2010, 1.3%yr 2011-2020, based on growth rates reported by 4 largest utilities
- New in-state power generation
  - through 2010: based on plants under construction
  - 2010-2020: averages 1.1%/yr, based on USDOE's Annual Energy Outlook's regional forecast; mix of non-renewable generation assumed to be 95% gas, 5% oil
- Consumption (load) based calculations
  - 2002-2005: based on fuel mix disclosure (FMD) reports (to CTED)
  - 1990-2001: analysis ongoing (draft uses GHG emissions rate from 2002 FMD)
  - 2006-2020: based on 2005 GHG emission rate, changes based on projected shifts in regional generation mix

Part 3

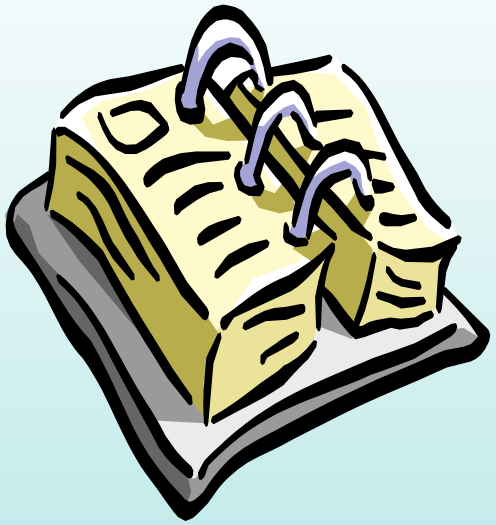
- Draft Potential GHG Mitigation Options

CCS Catalog of State Actions

- Actions undertaken or considered by a wide variety of US states
- Many actions provide GHG reductions coincidentally or as a co-benefit
- Cover all economic sectors
- Cover many implementation mechanisms

Next TWG Call

- Agenda:
  - Discuss potential priorities for analysis of policy options
  - Review the Washington State emissions inventory and projection if/as needed
- Proposed date/time:
  - ES TWG call: Thursday, May 24, 9:30 – 11:00 AM (tentative)



Public Input, Announcements